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Job No.: CECTC-BBMP-GNR-WNo.14-2016-17 Date : 04.06.2016

GRADATION FOR GSB (CLOSE GRADED)
IS : 2720 (Part - 4)

Client : **Executive Engineer,** Dasarahalli Division, BBMP, Bangalore.

Agency : **Technical Manager (West),** KRIDL, PIU, Bangalore.

Name of Work : Improvement to roads at Navy Layout in Ward No. 14, BBMP, Bangalore.

Reference : EE/DD/W/107/2013-14 Dated: 27.06.2014

Date of Testing : 04.06.2016

Sample Source : GSB, Mix plant Bangalore **Oven Dry Wt (gm) :** 25355

TABLE – 1

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Specified Limits
75.0	0	0	0.00	100	100
53.0	1875	1875	7.39	92.61	80-100
26.50	4860	6735	26.56	73.44	55-90
9.50	3785	10520	41.49	58.51	35-65
4.75	5060	15580	61.45	38.55	25-55
2.36	2845	18425	72.67	27.33	20-40
0.425	3265	21690	85.55	14.45	10-25
0.075	2040	23730	93.59	6.41	3-10
PAN	1625				
Total	25355				

Remarks: Satisfies MORTH Specifications as per Table 400-1, Grading I

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Job No.: CECTC-BBMP-GNR-WNo.14-2016-17 Date : 09.06.2016

ATTERBERG LIMITS TEST FOR WMM
MORTH TABLE-400-13

Client : **Executive Engineer,** Dasarahalli Division, BBMP, Bangalore.
Contractor : **Technical Manager (West),** KRIDL, PIU, Bangalore.
Name of Work : Improvement to roads at Navy Layout in Ward No. 14, BBMP, Bangalore.
Reference : EE/DD/W/107/2013-14 Dated: 27.06.2014
Date of Testing : 09.06.2016
Material : Wet Mix Macadam
Sample Location : WMM Mix Plant

As per MORTH Table 400-13

Sl. No.	Particulars	Test Results	Standards as per Specifications
1	Liquid Limit, %	21.60	Nill
2	Plasticity Index, %	Non Plastic	6.0% Maximum.

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Job No.: CECTC-BBMP-GNR-WNo.14-2016-17 Date : 11.06.2016

GRADATION FOR WMM
MORTH TABLE-400-13

Client : **Executive Engineer,** Dasarahalli Division, BBMP, Bangalore.

Contractor : **Technical Manager (West),** KRIDL, PIU, Bangalore.

Name of Work : Improvement to roads at Navy Layout in Ward No. 14, BBMP, Bangalore.

Reference : EE/DD/W/107/2013-14 Dated: 27.06.2014

Date of Testing : 11.06.2016

Material : Wet Mix Macadam

Sample Location : WMM Mix Plant Oven Dry Wt (gm): **13635**

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	455	455	3.3	96.7	95-100
22.4	3675	4130	30.3	69.7	60-80
11.2	3275	7405	54.3	45.7	40-60
4.75	2165	9570	70.2	29.8	25-40
2.36	1910	11480	84.2	15.8	15-30
0.600	965	12445	91.3	8.7	8-22
0.075	865	13310	97.6	2.4	0-5

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Job No.: CECTC-BBMP-GNR-WNo.14-2016-17

09.06.2016

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Client	**Executive Engineer,** Dasarahalli Division, BBMP, Bangalore.
Agency	**Technical Manager (West),** KRIDL, PIU, Bangalore.
Name of Work	Improvement to roads at Navy Layout in Ward No. 14, BBMP, Bangalore.
Reference	EE/DD/W/107/2013-14 Dated: 27.06.2014
Technical Reference	IS 2386(Part 1) 1963 (RA 2011)
Type of Mix	Wet Mix Macadam
Sample ID	WMM Layer
Date of Testing	09.06.2016

Result : Flakiness Index = **11.41%**

Elongation Index = **13.53%**

Result : Combined Flakiness & Elongation index 24.94%

Comments:

Maximum allowable Flakiness & Elongation Index for Wet Mix Macadam is 30%

Note:

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Job No.: CECTC-BBMP-GNR-WNo.14-2016-17 17.06.2016

Specific Gravity And Water Absorption Test
IS: 2386 Part III

Client	**Executive Engineer,** Dasarahalli Division, BBMP, Bangalore.
Agency	**Technical Manager (West),** KRIDL, PIU, Bangalore.
Name of the Work	Improvement to roads at Navy Layout in Ward No. 14, BBMP, Bangalore.
Reference	EE/DD/W/107/2013-14 Dated: 27.06.2014
Type of Mix	Bituminous Concrete
Date of Testing	17.06.2016

Sl. No.	Details	Notation	Test Number			Mean Value
			Test 1	Test 2	Test 3	
1	Weight of aggregate suspended in water with the basket	W_1 g	2035	2032	2033	
2	Weight of basket suspended in water	W_2 g	755	755	755	
3	Weight of saturated aggregate in water	$(W_1 - W_2) = W_s$ g	1280	1277	1278	
4	Weight of saturated surface dry aggregate in air	W_3 g	2018	2022	2019	
5	Weight of water equal to the volume of the aggregate	$(W_3 - W_S)$ g	738	745	741	
6	Weight of oven dried aggregate	W_4 g	2001	2003	2004	
7	Specific Gravity	$W_4/(W_3-W_S)$	2.711	2.689	2.704	2.701
8	Apparent Specific gravity	$W_4/(W_4-W_S)$	2.775	2.759	2.760	2.765
9	Water Absorption	$((W_3-W_4)*100)/W_4$	0.85%	0.95%	0.75%	0.85%

Comments:
→ Maximum allowable Aggregate Water absorption value for Bituminous Concrete is 2.0%

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Job No.: CECTC-BBMP-GNR-WNo.14-2016-17 Date: 17.06.2016

TEST REPORT ON STABILITY OF MIX

Client	:	**Executive Engineer,** Dasarahalli Division, BBMP, Bangalore.
Agency	:	**Technical Manager (West),** KRIDL, PIU, Bangalore.
Name of the Work	:	Improvement to roads at Navy Layout in Ward No. 14, BBMP, Bangalore.
Reference	:	EE/DD/W/107/2013-14 Dated: 27.06.2014
Source of location	:	Hot mix Plant, Bangalore
Type of Mix	:	Bituminous Concrete
Date of Testing	:	17.06.2016

The results of the tests conducted on the bituminous concrete mix sample are as follows:

Sl. No	Description	Test Result 1	Test Result 2	Requirement as per MORTH (Table 500-19)
1	Marshal Stability, Kn	9.45	10.20	9 Kn (min)
2	Marshal flow, mm	3.60	3.85	2 – 4
3	Percent air voids in Mineral Aggregate	14.35	13.60	13 – 15
4	Voids in Compacted Mix	5.85	4.55	3 – 6
5	Percent Voids filled with Bitumen	72.65	72.40	65 - 75
6	Density, g/cc	2.26	2.27	--

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